

REMARKS

Claims 1-41 were previously pending in this application. No new claims are added and no claims are canceled with this response. As a result claims 1-41 are pending for examination with claim 1 being an independent claim.

Summary of Personal Interview with Examiner

Applicant thanks Examiner Fox for his time and courtesy during the personal interview conducted at the U.S. Patent Office on September 20, 2007 with Eric Redemann of Celerity, Inc. (assignee of this application), and Applicant's representatives Robert Skrivanek and the undersigned. During the interview the parties discussed the development of the art and differences between the invention and the prior art. Mr. Redemann provided samples for review by the parties. These included samples of commercial implementations of the invention and samples of various prior art devices, including commercial samples corresponding to Figs. 6 and 7 of U.S. Patent No. 5,992,463 to Redemann et al. (hereinafter "Redemann") and commercial samples corresponding to the bridge fittings 50 and backing plate 40 described in U.S. Patent No. 6,629,546 to Eidsmore et al. (hereinafter "Eidsmore") as illustrated, for example, in Fig. 5 of Eidsmore. The samples concerning Eidsmore were previously used to conduct leak testing at the request of the manufacturer. The parties did not reach agreement concerning the patentability of the pending claims.

Rejections Under 35 U.S.C. §103

The Office Action rejects claims 1-16, 18-34 and 37 under 35 U.S.C. §103(a) as being unpatentable over Redemann (the '463 patent) in view of Eidsmore (the '546 patent). Applicant respectfully disagrees and asserts that the pending claims are non-obvious in view of the asserted combination because the modification of Redemann with Eidsmore renders Redemann unsuitable for its intended purpose. That is, the proposed combination reduces the sealing integrity of Redemann in a manner that is both unacceptable in the fields to which the device of Redemann is directed and clear to one of ordinary skill in the art. Accordingly, the asserted combination is non-obvious because the alleged motivation to combine the references ("to reduce the cost of manufacture," see the Office Action at page 2) is moot where the combination renders the primary reference unsuitable for its intended purpose. Further, the addition of Eidsmore to Redemann does

not necessarily reduce costs because that approach requires the machining of a separate manifold from high cost material (i.e., stainless steel or other material suitable for use with corrosive process gas). For example, as discussed during the interview, there are circumstances in which a quality machining operation may be employed to cost-effectively manufacture a fluid-carrying substrate including a manifold from a single piece of material.

During the interview, Mr. Redemann presented facts concerning the importance of leak-free operation in certain fields in which the present invention may be employed, for example, in gas sticks and gas panels used in semiconductor manufacturing. Mr. Redemann also presented facts concerning the levels of shock and vibration to which such equipment is routinely subjected during shipping. In particular, Mr. Redemann described that fluid distribution equipment is often assembled and leak tested by the manufacturer before being shipped to a customer site. In general, the shock and vibration to which such equipment is routinely subjected, even during relative short duration road transport (e.g., a matter of hours), can create leaks in fluid connections that were previously pressure tested and determined to be leak-free prior to shipment. Because of the hazardous nature of the process gasses often employed with the fluid distribution systems, such leakage is unacceptable. Mr. Redemann further described that the subject matter of the instant application provides a structure that greatly improves the leak-free nature of the connections employed in such gas panels as compared with the prior art. The structure achieves this improvement by, for example, supporting and positioning the manifold within a channel of a fluid-carrying substrate while locating the ports of the manifold and the ports of the substrate in a common plane.

Referring to Figs. 5, 7 and 9 of this published application (US2004/0129324A1), the “channel [is] adapted to position the manifold within the channel [of a fluid-carrying substrate] so that the first surface of the substrate body and the first surface of the manifold body are aligned in a common plane” as recited in claim 1. Accordingly, a fluid handling component may be fluidly connected to the ports in the common plane by sealing the connections between, for example, the fluid handling component and port(s) of the substrate and port(s) of the manifold.

However, Fig. 7 of Redemann illustrates that the sites available for coupling fluid handling components to the substrate include an outer circumferential ring (e.g., the rings 406, 408 and 410). These outer circumferential rings are employed with a seal ring (e.g., the seal ring 580 illustrated in Fig. 16) to provide a leak-free seal at the connection between a valve, for example, and the

substrate. The Office Action proposes to combine the channel 41 of Eidsmore with the substrate of Redemann. Such a combination, however, renders Redemann unsuitable for leak-free operation because the channel would necessarily be cut through the outer circumferential rings of the substrate thereby ruining the leak-free connection between the valve and the substrate. Thus, the proposed modification in view of Eidsmore renders Redemann unsuitable for its intended purpose and results in a substantial disadvantage in view of Redemann's intended function of leak-free fluid distribution for semiconductor manufacturing.

In contrast, the manifolds described in the this application can effectively span a plurality of gas sticks because they can provide a rigid structure that is more durable, and as a result, less prone to leaks that would otherwise result from the shock and vibration to which such equipment is routinely subjected during shipment. As the published application states “[e]ach of the manifold portions ... is also typically formed from an elongated block of stainless steel or other suitable material, and connected together to form a common manifold,” see Fig. 1. (Paragraph 0046.) Accordingly, the subject matter of claim 1 does provide a technological advance in view of the prior art.

Applicant submits that the technological advance provided by the invention is not only non-obvious in view of the development of the art but is also substantial to the industry. That is, as described above, the technological advance provided by the invention provides significant benefits that were not taught or suggested by the cited references. In particular, the invention allows for the assembly of gas sticks and gas panels with ports in a common plane using drop-in manifolds included in fluid-carrying substrates. The preceding is accomplished while providing a structure that is not prone to leaks that would otherwise result from routine shipping and handling. The combination of Redemann and Eidsmore does not achieve such a result because, as described above, the combination destroys the seal integrity of Redemann.

Further, one of ordinary skill in the art would not find the backing plate 40 shown in Fig. 7 of Eidsmore to be analogous to the modular substrate taught by Redemann. In particular, Eidsmore teaches that individual bridge fittings must be attached together to provide a fluid flow that is transverse to and interconnects adjacent gas sticks. Because of the discrete nature and small size of each bridge fitting, Eidsmore teaches that the bridge fittings comprising the transverse fluid path are fully supported by the backing plate. Otherwise the transverse fluid path does not provide sufficient structural integrity to remain leak-free when subjected to routine shipping and handling.

In contrast to Eidsmore, Redemann teaches a structure in which the transverse fluid path extends between adjacent but separate modular substrates that are included in adjacent gas sticks. That is, as illustrated in Figs. 6 and 7, the interconnection of the transverse fluid path (e.g., the transverse bore 514, the transverse bore 462, etc.) of adjacent modular substrates includes a fitting (e.g., the fitting 522) that is suspended in the gap between the bore couplings of the adjacent substrates. Thus, the asserted combination results in a structure that suspends the bridge fitting in the gap between adjacent substrates in a manner that is inconsistent with the teachings of Eidsmore. Accordingly, the combined teachings of the references would not have suggested to one of skill in the art to make the proposed combination.

Accordingly, for at least the above reasons, Applicant respectfully requests that the rejection of claim 1 under 35 U.S.C. §103(a) be reconsidered and withdrawn. In addition, Applicant respectfully asserts that each of the dependent claims 2-15, 18-34 and 37 is also allowable because each depends either directly or indirectly from claim 1 and requests that the rejections of claims 2-15, 18-34 and 37 also be reconsidered and withdrawn.

Allowable Subject Matter

Claims 17, 35-36 and 38-41 are indicated as containing allowable subject matter. Applicant has deferred re-writing claims 17, 35-36 and 38-41 in independent form in view of the arguments provided herein regarding the patentability of the independent claim from which they depend.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an accompanying payment, please charge any deficiency to Deposit Account No. 50/2762, Ref. No. C1138-700110.

Respectfully submitted,
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